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ABSTRACT

The Micro-TOWER System of Vocational Evaluation includes work samples for assessing vocational skills, presentations of occupational information, behavioral observations, and group discussions focusing on vocational goals and related concerns. It has been field tested on over 1,200 persons at eighteen sites, including rehabilitation facilities, psychiatric hospitals, correctional facilities, and a school for the mentally retarded. Thirteen work sample tests are designed to measure five skill areas: Verbal (Want Ads Comprehension, Message Taking), Numerical (Payroll) Computation, Making Change), Motor (Bottle Capping, Packing, Electronic Connector Assembly, Lamp Assembly), Spatial (Blueprint Reading, Graphics Illustration), and Clerical Perception (Mail Sorting, Filing, Zip Coding, Record Checking). This report presents data comparing the performance of a variety of special disability groups to the performance of the general rehabilitation group, which includes all of the individuals who participated in the field testing. Performance data are summarized for groups of the physically disabled, emotionally disturbed, educable mentally retarded, brain-injured, adult offenders, ex-alcoholics, Spanish-speaking, visually handicapped, and deaf. (Author/BW)

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PERFORMANCE OF SELECTED DISABILITY GROUPS ON THE MICRO-TOWER WORK SAMPLE EVALUATION

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THE MICRO-TOWER SYSTEM OF GROUP EVALUATION

There is a definite need to help disabled individuals achieve their potential so they may participate as fully as possible in society. In response to this need Micro-TOWER, a new system of vocational evaluation, was developed (Backman, 1977a, 1975; Loeding, 1975).

The Micro-TOWER system includes work samples for assessing vocational skills, presentations of occupational information, behavioral observations, and group discussions focusing on vocational goals and related concerns. A complete evaluation takes from three to five days. Unlike other work sample evaluations, Micro-TOWER is administered to small groups of individuals, usually ten or less.

FIELD TESTING

Micro-TOWER has been used at ICD for several years. In 1976, Micro-TOWER was field tested in the United States under a grant from the Rehabilitation Services Administration, U.S. Department of Health, Education, and Welfare. There were eighteen field sites including rehabilitation facilities, psychiatric hospitals, correctional facilities, and a school for the mentally retarded. Over 1,200 persons were tested.

An end result of field testing was the development of norms for a wide range of disabled persons, e.g., physically disabled, emotionally disturbed, brain damaged, educable mentally retarded, ex-drug abusers, ex-alcoholics, adult offenders, and those with cerebral palsy.

In addition, special projects are being conducted with handicapped children in public schools, the visually handicapped, and the deaf.

THE WORK SAMPLES AND APTITUDES MEASURED

A work sample is essentially a performance test which simulates tasks required in an actual job. Traditionally, work samples have been based on job analysis and have assessed skills required for a specific job. Micro-TOWER work samples differ from traditional ones in that they are essentially aptitude tests. Although each work sample looks like a particular job task, the skills assessed are required for a wide variety jobs. A complete Micro-TOWER evaluation results in an aptitude profile demonstrating individuals' strengths and weaknesses in five aptitude areas: verbal, numerical, spatial, motor, and clerical perception.

There are 13 work samples in the battery. The time for administering each work sample varies from 20 minutes to 2 1/2 hours. The work samples are listed below:

Verbal: Want Ads Comprehension, Message Taking.

Numerical: Payroll Computation, Making Change.

Motor: Bottle Capping and Packing, Electronic Connector Assembly, Lamp Assembly.

Spatial: Blueprint Reading, Graphics Illustration.

Clerical Perception: Mail Sorting, Filing, Zip Coding, Record Checking.

MAKING USE OF THE RESULTS

For individuals in rehabilitation programs, Micro-TOWER is usually used as a screening device for further evaluation or placement in a training program. For students in special education or vocational or career education programs, Micro-TOWER can be used to guide them into appropriate classes, training programs, remedial courses, or therapy.

Separate norms tables are provided so that the level of a client's functioning can be compared to an appropriate reference group. In addition, observations of the way a disabled person learns and performs a task can prove helpful for subsequent guidance and training.

DIFFERENCES IN PERFORMANCE BY DISABILITY

Now let us take a look at the performance of the various disabled groups on the Micro-TOWER work samples. The median scores of all the individuals participating in field testing will serve as the basis for comparison; this group will be referred to as the general rehabilitation group. The mentally retarded and Spanish-speaking were not included when calculating the mean scores of the general rehabilitation group: Their scores would tend to lower the mean scores of the general group; this in turn could lead to spurious interpretations of performance.

THE PHYSICALLY DISABLED

All Micro-TOWER work samples are administered in a sitting position; this makes it possible to evaluate persons in wheel chairs. The work samples do require the use of at least one hand. It is possible, however, that some special techniques used with the severely disabled could be used without affecting the standardization procedures. If norms are used for comparison, any changes in the standarization procedures would make it difficult, if not impossible, to objectively interpret the scores. Any special adaptations or changes should be noted.

Three hundred and ninety individuals, diagnosed as physically disabled, participated in field testing: 217 were males and 173 females. The average age was 30.4 years, as compared to 30.2 years for the general rehabilitation group.

The category of physically disabled includes a wide variety of disabilities: neurological disorders, epilepsy, amputations, and physical diseases. The average performance of this group was comparable to that of the general rehabilitation group. For individuals, the speed and quality of performance could be affected, depending upon the disability. Future analyses of the data will be directed toward identifying differences in performance of each of the subgroups comprising this larger group.

THE EMOTIONALLY DISTURBED

Micro-TOWER was field tested in two psychiatric hospitals. Also, many of the field sites, as well as ICD, serve emotionally disturbed individuals. The average age of those tested was 30.4 years. Their scores were comparable to those of the general rehabilitation group.

Although some disturbed individuals can not function in a group setting, for most of those participating in Micro-TOWER, the group setting was found to be preferable to the so-called individual approach. In the group approach, the administrator (evaluator) is always with the group. The constant presence of the evaluator in the room provides a supportive environment for those with emotional problems; also it has been observed that other individuals will offer encouragement and support to those expressing difficulties and negative feelings (Backman, 1977b).

THE EDUCABLE MENTALLY RETARDED

Micro-TOWER has been given to over 200 individuals diagnosed as educable mentally retarded (EMR). This is one of those classifications that is difficult to define. Persons included in the EMR group were so identified by the evaluator during field testing. The group was composed of 131 males and 103 females. The average age was 21.3 years; separate norms are provided for those 19 and under, and 20 and older.

Although IQ scores were not available in all cases, experience suggests that Micro-TOWER may not be suitable for those people whose IQ score is less than 60. However, IQ score alone should not be used to determine if a person might benefit from a vocational evaluation, such as Micro-TOWER.

On the average, the retarded individuals received scores at the 20th percentile or lower when compared to the general rehabilitation group. This is not unexpected, however. Their best average performance was in the area of motor skills and on Record Checking, a measure of clerical perception. On the work samples requiring reading and reasoning, their average performance was at the fifth percentile, suggesting that these work samples are too difficult for the retarded individuals. Guessing and other chance factors may have accounted for a large proportion of their performance on these work samples.

Also, it should be noted that the performance levels discussed here refer to median levels of a group. Within the educable mentally retarded group, there were individuals that were able to take work samples and perform at acceptable levels. It is these persons who may benefit most from such evaluations, and whose potential frequently can go unrecognized. Although Micro-TOWER was not designed for the mentally retarded, it has demonstrated its usefulness, particularly with those in the upper ranges of the educable mentally retarded group.

As there are few tests of vocational skills available for persons with low general learning ability, it should be recognized that work samples provide one solution to the motivational problem presented by paper and pencil tests. The fact that work samples tend to look like real jobs involves the retarded individual in the task at hand.

THE BRAIN INJURED

During field testing a small group of individuals diagnosed as Brain Damaged or Brain Injured was tested. This group, totalling 56 individuals (37 males, 19 females), had an average age of 27.5 years. Their performance, though generally below that of the general rehabilitation group, was quite variable. Their best performance was on Blueprint Reading and Zip Coding, where the average score was at the 40th percentile. Their poorest performance was on Bottle Capping and Packing, Electronic Connector Assembly, both motor skills tasks, and on Message Taking, a test of verbal ability, concentration, and attention to detail. On these work samples they scored at the 20th percentile or less.

Preliminary norms from a special project evaluating Brain Injured adolescents revealed quite different results. Only seven of the work samples were given because of time limitations. On these seven work samples the young people surpassed the Brain Injured adults on the motor skills tasks. They performed on an average level as compared to the general rehabilitation population on Electronic Connector Assembly and Lamp Assembly. They performed poorer than the Brain Injured adults on Graphics Illustration, Filing, Mail Sorting, and Making Change: Their average score on these work samples was only at the 20th percentile; whereas the Brain Injured adults scored within the 30-40th percentile on these work samples.

The discrepancy in performance is probably related to the lack of a clear definition for Brain Injured or Brain Damaged individuals. Sometimes when no obvious diagnosis can be made, persons are arbitrarily assigned to this group. The age of the individuals in these studies may also be a factor, but it is unclear how to interpret the

ADULT OFFENDERS

This group was comprised of 57 inmates in two correctional facilities; only five of the group were females. Their average age was 25.5 years, which is about 5 years younger than the general rehabilitation group.

Their scores were much more variable than those of the ex-drug abusers. With the exception of Making Change, their mean scores ranged from average to much above average when compared to the general rehabilitation group. Their best performance was on the motor skills work samples (Bottle Capping and Packing, Electronic Connector Assembly, and Lamp Assembly), where on the average they surpassed 85% of the general rehabilitation group. Age and absence of a disability would conceivably be factors related to their good performance.

EX-ALCOHOLICS

The ex-alcoholic tended to be slightly older on the average than the general rehabilitation group, i.e., 7.4 years older. As a group they were also 13 years older than the ex-drug abusers described previously. Eighty four persons were tested, one third of whom were males. Their scores on Micro-TOWER ranged from the 40th to 60th percentile when compared to the general rehabilitation group. Thus, Micro-TOWER seems to assess skills at an appropriate level of difficulty for these individuals.

LANGUAGE REQUIREMENTS

Many rehabilitation facilities and schools in the United States work with persons whose native language is not English. As the instructions for the Micro-TOWER work samples rely on demonstration, as well as well as spoken English, it is not necessary for those taking the work samples to have a high level of fluency. Also, since these are measures of special aptitudes, not all the work samples require verbal skills. In fact, persons can be shown how to do the motor skills work samples by demonstration alone; the tasks themselves require no verbal ability.

The amount of English required to understand the spoken instructions to perform well on the other work samples varies. A comparison of scores on reading tests and performance on the work samples suggest that a reading level of third to fourth grade would be sufficient.

The Want Ads Comprehension work sample is frequently given first to assess a person's level of English comprehension. This work sample is quite easy for non-retarded native speakers of English; however, those who are bi-lingual may score rather low. This does not necessarily mean low scorers cannot take the rest of the work samples. But it does indicate that they may need individual help, and that their scores must be interpreted with their language difficulties in mind. The cause of the low scores should be identified, if possible.

THE SPANISH-SPEAKING

Within the rehabilitation group tested, 60 individuals were identified whose primary language was Spanish. Their scores on the three motor skills work samples were above average, i.e., 60th percentile. On the other work samples they tended to perform at the 30-40th percentile as compared to the English-speaking persons. Given the large number of Spanish-speaking individuals in certain areas of the United States, as well as the potential use of Micro-TOWER in Spanish-speaking countries, funding is being sought to prepare a Spanish form of Micro-TOWER.

SPECIAL PROJECTS

In addition to the project with the Brain Injured students in special education mentioned earlier, there are two other disabled groups with whom Micro-TOWER is being used: the visually handicapped and the deaf. In both cases, these are in the research and development stage and norms are not yet available.

THE VISUALLY HANDICAPPED

Micro-TOWER has been used by the New York Association for the Blind (The Lighthouse). They use the work samples with clients who have a visual acuity of 8/200 or more. Staff at the Lighthouse prefer to use a system that requires little or no modification so that performance on a task resembling a real work situation can be observed. Some of the minor adaptations and limitations are described below.

With the visually handicapped more time is needed during the learning period for explanation and practice; thus, work samples are administered over a six-day period (three days a week for two weeks). During this time, group discussions are also conducted as they are considered an important part of the evaluation.

The occupational photographs that are presented at the beginning of the work samples are apparently too dark for some of the clients. This has not presented a severe problem as the cassette tape, which presents the instructions, describes sufficiently what is in the photographs.

The print in the Zip Code Directory is small and some visually handicapped clients find it a strain to read. But all of those tested so far have been able to take this work sample. The visually handicapped clients are slower on the tasks measuring clerical speed; measures of their clerical accuracy seem reliable.

THE DEAF

Some of the Micro-TOWER work samples have been given to the deaf, using a combination of demonstration and sign language. As the basic instructions are on tape, it has been necessary to find other ways to communicate. Presently this has involved a combination of demonstration by the test administrator and when necessary, sign language.

Deaf high school students were given selected work samples. Their performance in the motor skills area was quite good. They completed these work samples much quicker than other persons, as simple demonstrations were used in place of the more time consuming taped verbal instructions. They quickly grasped the required task and performed on a par with the general rehabilitation group. Their performance on the work samples measuring clerical perception was relatively poor, and it took much longer to explain what was expected of them. Another project is underway with deaf adults. As part of this project, various techniques will be tried out to overcome the problems of communicating the basic instructions to the deaf clients. Work is continuing in this area, as it is recognized that there is a need for vocational assessment techniques for the deaf.

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